REMARKS

Claims 1-2 and 4-8 are pending. Claim 1 has been amended. Claims 9 and 10 have been added. Support for the amendment and new claims is found in the Specification as filed at least on page 6, line 23-page 7, line 25; page 11, lines 14-19; page 22, lines 5-17, and FIGS. 2-4. Furthermore, it would be apparent to one of ordinary skill in the art that "a layer . . . essentially consisting of gold added with silver" in conjunction with the filed disclosure (e.g., FIGS. 2-4 and corresponding description) can be a layer essentially consisting of "gold containing a small amount of silver" or "an alloy" or "a homogeneous mixture" of gold added with silver. No new matter has been added. The rejections of the claims are respectfully traversed in light of the amendments and following remarks, and reconsideration is requested.

Rejection Under 35 U.S.C. § 102

Claims 1-2 and 5 are rejected under 35 U.S.C. § 102(a) as being anticipated by DiRenzo (U.S. Patent No. 3,599,326).

DiRenzo discloses the following:

> [T]he present invention contemplates a method of manufacturing printed circuit boards of the type having a plurality of contact pins projecting from one side thereof, and which pins are adapted for use as wire wrap terminals connecting board-carried wiring to external circuits. The method includes selectively coating portions of the pins . . . with a material to which solder will not adhere to maintain the portions free of solder and in condition for making of wire wrap connections, followed by subjecting the boards and pins to a batch of molten solder to connect the pins to the circuits carried by the board. (DiRenzo, col.1, ll.36-47).
>
> Still another method for applying a solder resistant coating comprises electroplating a layer of silver about .000025 inch thick on the gold plated pin to within about one-sixteenth inch of the solder pad. Again this leaves an exposed region of gold to which the solder will adhere. The assembly is then subjected to a hydrogen sulfide enriched atmosphere, whereby the silver coating is converted to silver sulfide which will reject solder during the wave soldering operation. (DiRenzo, col.3, ll.22-29) (emphasis added).

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Thus, DiRenzo only discloses an arrangement for preventing adherence of molten solder onto portions of pins that project from a printed circuit board when the circuit board is immersed or placed over a solder bath. Gold plated pins are disclosed as being selectively electroplated with a layer of silver which is converted to a coating of silver sulfide which is resistant to solder. Portions of the pins not selectively electroplated with the layer of silver is connected to the board circuits by the molten solder and should be able to adhere to solder. Accordingly, DiRenzo only discloses a composite of two layers, a layer of silver sulfide over a layer of gold. DiRenzo does not disclose or suggest a single layer of "gold containing a small amount of silver" or "an alloy of gold added with silver" or "a homogeneous mixture of gold added with silver" formed over a conductive contact part of said conductive contact member, as recited in independent Claims 1, 9, and 10, respectively.

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Rejections Under 35 U.S.C. § 103

Claims 1-2 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Akram et al. (U.S. Pat. No. 6,426,642 hereinafter "Akram").

Akram discloses the "formation of an insert for receiving and testing a . . . chip-scale-packaged microelectronic device having an array of outwardly projecting contacts, e.g., of a ball-grid-array or bump-grid-array (BGA). Such insert may also be known by other terms such as, for example, interconnect, interposer, socket, BGA test socket, or silicon insert." (Akram, col.4, ll.52-58). Such an insert includes a plurality of pockets 16 for receiving the solder balls of the device to be tested. *See* Akram, Figs. 14 and 29.

Akram further discloses:

> [A] first conductive material 62 is formed conformably over . . . the walls of pockets 16. In an exemplary embodiment, conductive material 62 . . . comprises metal wetable by solder. Preferably, conductive layer 62 comprises copper . . . . Alternative metals for conductive material 62 include gold, palladium, nickel, chromium, or alloys thereof.
>
> After forming conductive material 62, second conductive material 64 is formed over first conductive material 62 . . . . The second conductive material comprises material different from the first conductive material 62 and is selected to resist bonding to solder. In certain exemplary embodiments, second conductive material 64 comprises a metal such as tungsten, titanium, platinum, titanium nitride or titanium-tungsten. (Akram, col. 10, ll.36-53) (emphasis added).

Thus, Akram only discloses a composite of two layers: a second conductive material 64 selected to resist bonding to solder and that is different from gold or alloys thereof and which is formed over a first conductive material 62 wetable by solder. Accordingly, Akram does not disclose or suggest a single layer of "gold containing a small amount of silver" or "an alloy of gold added with silver" or "a homogeneous mixture of gold added with silver" formed over a conductive contact part of said conductive contact member, as recited in independent Claims 1, 9, and 10, respectively.

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Claims 1-2 and 4-6 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Haseyama et al. (U.S. Pat. No. 6,535,002) in view of DiRenzo. In rejecting the claims, the Examiner writes in part:

> Haseyama et al. does not disclose that **the layer:**
> 1) is resistant to solder deposition so that the conductive contact part of the conductive contact member may not be contaminated by deposition of solder from the object to be contacted formed at least over a conductive contact part of the contact member and
> 2) is essentially consisting of gold added with silver.
>
> DiRenzo teaches a layer consisting of gold added with silver (see Col.3, lines 22-25) to resist solder deposition. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made and for same reason to add silver over gold in structure of Haseyama et al.

For the same reasons as stated above, DiRenzo only discloses a composite of two layers, a layer of silver sulfide over a layer of gold. DiRenzo does not disclose or suggest a single layer of gold containing a small amount of silver or an alloy of gold added with silver or a homogeneous mixture of gold added with silver formed over a conductive contact part of said conductive contact member. Accordingly, DiRenzo does not remedy the deficiencies of Haseyama noted above and Haseyama does not remedy the deficiencies of DiRenzo noted above. Therefore, Haseyama in view of DiRenzo does not disclose or suggest all the limitations of independent Claims 1, 9, and 10.

Claims 1 and 7-8 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Loranger et al. (U.S. Patent No. 5,791,914) in view of Roth (U.S. Patent No. 4,511,076) and Means (U.S. Patent No. 3,230,297). In rejecting the claims, the Examiner writes in part:

> In regard to claim 1, Loranger discloses a conductive contact member 11 for establishing an electrical contact by being applied to an object to be contacted. However, Loranger does not disclose a layer of highly electrically conductive material resistant to solder deposition formed at least over a conductive contact part of the contact member.
>
> Roth teaches a solder resistant/repellant substance applied to portions where it desired the solder not adhere (Col. 3, line 26-30) and Means teaches a coating 17 on the spring loop 14, 16 of conductive wire. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made and for same reason to cover

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> a contact part 29 of Loranger with a layer of conductive material resistant to solder deposition as taught by Roth and Means.

Roth does not remedy the deficiencies of Loranger noted by the Examiner. In particular, Roth only discloses the prevention of the adhesion of liquid solder to portions of a circuit board in order to fabricate all the solder junctions in one working step. Soldering lugs (i.e., contact part) are left uncoated to be exposed to solder during the soldering step. Roth does not disclose or suggest preventing adhesion of solder to portions of a circuit board that will be used as a contact part of a contact member.

Furthermore, Roth discloses the use of an "electrically insulating and solder-repellant substance (e.g., a varnish). The electrically insulating and solder-repellant substance is applied to those portions of the upper surface where it is desired that solder not adhere." (Roth, col.3, ll.21-33). Thus, Roth does not disclose a layer of highly electrically conductive material resistant to solder deposition.

Means also does not remedy the deficiencies of Loranger noted by the Examiner. Means discloses the following:

> In order to guarantee the spring action of the loops 14, the wire is treated in appropriate [areas] by plating, oxidizing or chemical solutions such as the sulfides to resist the acceptance of solder. The special selective areas are shown in the figures as shaded areas and are designated by the numeral 17. If the connector is formed from material that readily accepts solder, capillary action may take place soldering the arms 13 to the contact segments 16 or the circuitry 11. The spring loop 14 would then be isolated, resulting in a rigid connection similar to those previously described. However, if the connector material is treated as previously mentioned, an investigation of the figures indicates that even when dip soldered, portions of the spring loop 15 and the extending arms 13 will resist solder. The arms 13 will not adhere to the circuitry 11, the adjacent parts of the spring loop 14, or the contact segments 15, even though the contact segments 16 of the spring loop 14 will be solidly soldered to the circuitry 11. It is also pointed out that solder will not build up on the spring loop 14 nor solder the arms 13 together with the resulting loss of spring action. (Means, col.2, l.58-col.3, l.13).

Thus, Means only discloses application of plating, oxidizing, or chemical solutions to areas of a loop 14 in order to "guarantee the spring action of the loops." Contact segments are not treated to resist solder but instead, "the contact segments 16 of the spring loop 14 will be

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solidly soldered to the circuitry 11." (Means, col.2, l.-58-col.3, l.13; Figs. 1-6). Furthermore, Means does not disclose or suggest use of a layer of gold containing a small amount of silver or an alloy of gold added with silver or a homogeneous mixture of gold added with silver.

Accordingly, Roth and Means do not remedy the deficiencies of Loranger noted by the Examiner. Loranger in view of Roth and Means neither disclose or suggest a single layer of "gold containing a small amount of silver" or "an alloy of gold added with silver" or "a homogeneous mixture of gold added with silver" formed over a conductive contact part of said conductive contact member, as recited in independent Claims 1, 9, and 10, respectively.

In contrast to the cited references above, Claim 1 recites a "conductive contact member . . . comprising a layer of highly electrically conductive material resistant to solder deposition and essentially consisting of gold containing a small amount of silver, the layer being formed at least over a conductive contact part of said conductive contact member."

Similary in contrast, Claim 9 recites a "conductive contact member . . . comprising a layer of highly electrically conductive material resistant to solder deposition and essentially consisting of an alloy of gold added with silver, the layer being formed at least over a conductive contact part of said conductive contact member."

Similarly in contrast, Claim 10 recites a "conductive contact member . . . comprising a layer of highly electrically conductive material resistant to solder deposition and essentially consisting of a homogeneous mixture of gold added with silver, the layer being formed at least over a conductive contact part of said conductive contact member."

Therefore, because DiRenzo, Akram, Haseyama, Loranger, Roth, and Means, alone or in combination, do not disclose or suggest all the limitations of Claims 1, 9, and 10, Claims 1, 9, and 10 are patentable over the cited references, alone or in combination.

Claims 2-8 are dependent on Claim 1 and contain additional limitations that further distinguish them from DiRenzo, Akram, Haseyama, Loranger, Roth, and Means, alone or in combination. Therefore, Claims 2-8 are allowable over the cited references for at least the same reasons provided above with respect to Claim 1.

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CONCLUSION

For the above reasons, Applicants believe pending Claims 1-10 are now in condition for allowance and allowance of the Application is hereby solicited. If the Examiner has any questions or concerns, the Examiner is hereby requested to telephone Applicants' Attorney at (949) 752-7040.

I hereby certify that this correspondence is being facsimile transmitted to Official Facsimile number for Technology Center 2800 at (703) 872-9319, to the attention of Examiner Larisa Tsukerman, Mail Stop AP, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on November 25, 2003.

Adriane Giberson — November 25, 2003

Respectfully submitted,

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